VIRAL HEPATITIS PRE COURSE

Introduction

Viral hepatitis is a term commonly used for several diseases that produce similar symptoms, but are caused by different viruses and are acquired in different ways. There are at least five types of hepatitis viruses, but the most common in the United States are hepatitis A, B, and C.

Hepatitis A virus (HAV) is most commonly transmitted by the fecal/oral route. After ingestion, HAV replicates in the liver and is shed in high concentrations in the feces. Hepatitis B virus (HBV) and hepatitis C virus (HCV) are blood borne viruses; (i.e., found in the blood of infected persons). Blood tests are available to diagnose hepatitis A, B, and C. Hepatitis A and B can be prevented by vaccination, but there is no vaccine for hepatitis C.

The liver is vital to maintaining good health. Many bodily functions are affected if one's liver is not is not functioning properly. The body depends on the liver to regulate, synthesize, store, and secrete many important nutrients, and to purify, transform, and clear toxic or unneeded substances from the body. Though the liver has the ability to regenerate, this capacity can be exceeded by repeated or extensive damage.

Key Learning Points

1. Describe the functions of the liver.
2. Identify the primary route by which HAV is transmitted.
3. Identify the average incubation period for hepatitis A.
4. Describe the common symptoms associated with hepatitis A in adults.
5. Describe ways in which HAV infection may be prevented and controlled.
6. Identify four ways HBV may be transmitted.
7. Describe the symptoms associated with hepatitis B.

8. Identify and describe the most effective means in preventing HBV infection
9. Identify the most common risk factor for acquiring HCV infection.
10. Identify four groups of people at increased risk for HCV infection.
11. Identify five factors that contribute to the progression of chronic HCV infection.
12. Describe three recommendations to prevent transmission to others for people infected with HCV.
13. Define the following terms:
    - ➪ hepatitis
    - ➪ antibody
    - ➪ chronic infection
    - ➪ cirrhosis
    - ➪ immune globulin
    - ➪ jaundice
    - ➪ acute infection
    - ➪ perinatal
    - ➪ prophylaxis

Characteristics of Hepatitis A

Hepatitis A is the most frequently reported type of acute viral hepatitis in the United States. It is caused by infection with HAV. Infection with HAV produces either asymptomatic or symptomatic infection in susceptible persons (persons not immune from either vaccination or past infections) after an average incubation period of 30 days (range: 15-50 days). Each year in the United States, an estimated 100 persons die as a result of acute liver failure due to hepatitis A. The risk of death from hepatitis A is greater among adults >50 years of age and among persons with chronic liver disease.

Transmission

Hepatitis A virus is transmitted most often by the fecal-oral route through either close, intimate person to person contact or by ingestion of contaminated food or water. The most frequently reported source of infection is exposure to an infected household or sex contact. Many sexual practices facilitate fecal-oral spread of HAV and unknown contamination may occur during sexual intercourse. Transmission is most likely to occur 1-2 weeks prior to the onset of clinical illness, when concentration of the virus in the stool is at its highest. For practical purposes, the HAV infected individual can be considered infectious from 2 weeks before to 1 week after the onset of clinical illness.

Because most children have asymptomatic or unrecognized infections, they play an important role in HAV transmission and serve as a source of infection for others. In one study of adults without an identified source of infection, the presence of a young child, in the household was associated with HAV transmission.

Symptoms

Symptoms, when present, usually last less than 2 months. The occurrence of symptomatic HAV infection is directly related to age, with more than 80% of adults having symptoms compatible with acute viral hepatitis and most young children having asymptomatic infection. If symptoms occur, they might include nausea, vomiting, loss of appetite, malaise (vague feeling of bodily discomfort), diarrhea, fever, light colored stools, dark urine, and jaundice (yellowing of skin or eyes). These symptoms are similar to other causes of hepatitis; thus blood tests are necessary to determine the specific cause. HAV infection never results in chronic infection or chronic liver disease; however, patients can experience a relapse of symptoms within 6 months of acquiring hepatitis A.

Prevention and Control of Hepatitis A

Because HAV is transmitted by a different route (i.e., fecal/oral) than other STDs, measures typically used to prevent transmission of other STDs (e.g. use of condoms) will not prevent HAV transmission. Vaccination is the most effective means of preventing HAV transmission among persons at risk, many of whom seek services in the STD clinic setting.

Hepatitis A vaccine, a two-dose series, provides pre-exposure protection from hepatitis A and is licensed for use in persons aged 2 years or older. It is recommended for persons at increased risk of infection, including men who have sex with men (MSM) and users of illicit drugs, as well as children living in some areas (see appendix Hep-1 for recommended populations for hepatitis A vaccine). Because hepatitis A vaccine is not licensed for use after exposure to HAV, previously unvaccinated persons exposed to HAV (e.g., household or sex contact, or sharing illegal drugs with a person who has hepatitis A) should receive immune globulin (IG) as soon a possible, but not more than 2 weeks after exposure. Immune globulin is a concentrated preparation of antibodies that provides protection for about three months against hepatitis A through passive transfer of antibody. If long term protection is needed, hepatitis A vaccine can be given at the same time as IG.

Recommended dosages and schedules of hepatitis A vaccines

Vaccine	Age group	Dose	Volume	# Doses	Schedule
Havrix (Glaxo-SmithKline)	2–18 years	720 El.U.*	0.5 ml	2	0, 6–12 mos.
	19 years and older	1440 El.U.*	1.0 ml	2	0, 6–12 mos.
Vaqta (Merck & Co.)	2–18 years	25 U**	0.5 ml	2	0, 6–18 mos.
	19 years	50 U**	1.0 ml	2	0, 6–12 mos.

*El.U. = Elisa Units **U = Units

Introduction to Hepatitis B

Hepatitis B is a common STD caused by infection with HBV. Acute infection with HBV can cause symptoms or be asymptomatic. Some people do not recover from acute infection and develop chronic HBV infection, which usually persists for the person=s lifetime. The long-term complications of liver damage from chronic HBV infection, which include cirrhosis and liver cancer, are fatal in some cases. Each year thousands of people of all ages get infected with HBV, an estimated 181,000 in 1998. In total, an estimated 1.25 million people in the United States have chronic HBV infection, and about 5,000 deaths occurred from HBV-related cirrhosis or liver cancer in 1998. Hepatitis B is currently the only vaccine-preventable STD.

Transmission

HBV is efficiently transmitted by percutaneous or mucous membrane exposure to infectious blood or body fluids from persons who have either acute or chronic HBV infection. Sexual and perinatal (from mother to child during birth) transmission of HBV results from mucous membrane exposures to infectious blood or body fluids. Percutaneous exposures include transfusion of blood or blood products, sharing needles or drug paraphernalia, chronic hemodialysis, and occupational exposure. Saliva has only been implicated in transmission when biting has occurred. Sexual transmission, both hetero- and homosexual, now accounts for most cases of hepatitis B in the United States.

HBV is not spread by kissing, hugging, coughing, sharing eating utensils or drinking glasses, breast feeding, food, water, or casual contact. A person who has had other types of hepatitis, such as hepatitis A or hepatitis C, can still become infected with HBV.

Course of Disease

The incubation period for acute HBV infection averages 4 months, but can range from 6 weeks to 6 months. Only 50% of adults with acute HBV infections will have symptoms. About 1% of acute cases result in acute liver failure and death. Symptoms of acute hepatitis B may include: fatigue, nausea, loss of appetite, vomiting, stomach or joint pain, jaundice (yellowing of skin and eyes), dark colored urine, and light-colored stool. Blood tests are necessary to diagnose hepatitis B, as the symptoms of all types of viral hepatitis are the same (see tables 1 and 2).

After acute infection, some people do not clear the virus from their body and develop chronic (lifelong) HBV infection. Prevention is very important because chronic HBV infection can lead to cirrhosis (scarring) of the liver, liver cancer, liver failure, and death. The likelihood of developing chronic infection is related to the age of the person when they first get infected. Infants infected at birth from a mother who has chronic infection (perinatal infection) have up to a 90% chance of developing chronic infection. About 50% of children infected during the first 5 years of life develop chronic HBV infection, whereas 2%-6% of persons infected as older adolescents or adults develop chronic infection. Thus, although most new infections are currently occurring among adults, preventing infection at birth and in early childhood is also critical because it will prevent many chronic infections.

Table 1. Viral hepatitis serologic markers

Abbreviation	Term	Definition/Comments
HBsAg	Hepatitis B surface antigen	Surface antigen(s) of HBV detectable in large quantity in serum, infectious
Anti-HBs	Antibody to HBsAg	Indicates past infection with immunity to HBV, passive antibody from HBIG, or immune response from HB vaccine
HBcAg	Hepatitis B core antigen	No commercial test available
Anti-HBc	Antibody to HBcAg	Indicates prior or recent infection with HBV
IgM anti-HBc	IgM class antibody	Indicates recent infection with HBV; detectable for 4 to 6 months after infection
HBeAg	Hepatitis B e antigen	Correlates with higher levels of HBV in serum and increased infectivity
Anti-HBe	Antibody to HBeAg	Presence in serum of HBsAg carrier indicates lower titer of HBV

Table 2. Interpretation of the hepatitis B panel

Tests	Results	Interpretation
HBsAg anti-HBc anti-HBs	negative negative negative	susceptible
HBsAg anti-HBc anti-HBs	negative negative or positive positive	immune
HBsAg anti-HBc anti-HBs	negative negative positive $\geq$ 10 mIU	immune due to vaccine
HBsAg anti-HBc IgM anti-HBc anti-HBs	positive positive positive negative	acutely infected
HBsAg anti-HBc IgM anti-HBc anti-HBs	positive positive negative negative	chronically infected
HBsAg anti-HBc anti-HBs	negative positive negative	Check with a doctor to determine what this might mean*

*1. May be recovering from acute HBV infection.
2. May be distantly immune and test not sensitive enough to detect very low level of anti-HBs in serum.
3. May be susceptible with a false positive anti-HBc.
4. May be undetectable level of HBsAg present in the serum and the person is actually a carrier.

Prevention and Control of Hepatitis B

HBV infection can be prevented either before the person is exposed (pre-exposure) or, in some instances, after exposure (post-exposure prophylaxis). Two products are used for hepatitis B prevention: hepatitis B immune globulin (HBIG) and hepatitis B vaccine. Hepatitis B vaccine is used for both pre-exposure and post-exposure prophylaxis. HBIG is used for post-exposure prophylaxis, often along with hepatitis B vaccine

HBIG is a preparation of antibodies against HBV, and thus works quickly to protect against infection. It is recommended for use after exposure to HBV in certain situations, including for infants born to mothers with chronic infection and after a needlestick or sexual exposure, in some cases (see below section xx).

Hepatitis B vaccine, available in the United States since 1982, offers the best protection against HBV infection. The vaccine has been shown to be safe, with over 20 million adolescents and adults vaccinated in the United States alone. Two vaccines are currently available in the United States, Recombivax HB[7] and Engerix-B[7], both are produced by recombinant DNA technology, do not contain blood products, and are considered equivalent. A number of vaccination schedules have been used for adults and adolescents. For adults, the most commonly followed 3-dose schedule is 0, 1, and 6 months; however, there are other approved schedules that may be used (see table 3).

Table 3. Recommended Regimen: doses and schedules of currently licensed hepatitis B vaccines for adolescents and adults.

Group	Recombivax HB® Dose (µg) (mL)	Engerix-B® ¶ Dose (µg) (mL)	Schedule (months)
Adolescents (11-19 years)*	5† 0.5	10† 0.5	0, 1, 6, or 0, 2, 4, or 0, 1, 4, or 0, 12, 24
Adolescents (11-15 years)*	10§ 1.0		0, 4
Adults (>19 years)	10§ 1.0	20§ 1.0	0, 1, 6, or 0, 2, 4, or 0, 1, 4

* Eligible persons under age 19 can receive free vaccine under the Vaccines for Children (VFC) program
† Pediatric formulation
§ Adult formulation
¶ 0, 1, 2, 12 month schedule has been licensed for Engerix-B only

If the vaccination series is interrupted after the first or second dose of vaccine, the series should be picked up with the next dose administered as soon as possible. The series does not need to be restarted if a dose has been delayed. All persons seen in an STD clinic should be vaccinated against hepatitis B. For other persons for whom hepatitis B vaccination is recommended, refer to Appendix Hep-1.

Persons should have a blood test (anti-HBs) 1 to 2 months after completing the vaccine series if: their sex partner has chronic hepatitis B, their immune system is not working well (i.e., they are on kidney hemodialysis or diagnosed with AIDS), or they have a job working with patients that exposes them to blood or body fluids on a regular basis. Babies born to infected mothers should get two blood tests (HBsAg and anti-HBs), between 9-15 months of age to ensure that they have responded to the vaccine series and have not been infected with HBV.

Special Circumstances

Hepatitis B and Pregnancy

All pregnant women seen in STD clinics should be tested for HBsAg, whether they have been tested in the past or not. This is important because several studies indicate that 10% to 15% of HBsAg-positive pregnant women acquired their HBV infection after a previous pregnancy, and during a period in which they were tested for an STD. If positive, this test result needs to be reported to the state's perinatal immunization or HBV prevention program to ensure proper case management of the mother and appropriate post-exposure immunization of her at-risk infant. HBsAg-negative pregnant women seen in an STD clinic who have not been previously vaccinated should receive hepatitis B vaccine. Pregnancy is not a contraindication to vaccination.

Hepatitis B and HIV

Since HBV and HIV share the same transmission routes, persons at risk for HIV infection are also at risk for HBV infection. Acute HBV infection in HIV-infected persons is more likely to lead to chronic HBV infection. Infection with HIV can also impair the response to hepatitis B vaccine; therefore, HIV-infected persons who are vaccinated should be tested for anti-HBs 1 - 2 months after completing the vaccine series. Re-vaccination with three more doses is recommended for those who do not respond to the first series. Those who do not respond to additional doses should be advised that they are susceptible to HBV infection and should be counseled on ways to prevent HBV infection.

Hepatitis B and Victims of Sexual Assault

Studies have not determined the frequency with which HBV infection occurs following sexual abuse or rape. People who have completed the vaccine series and who are victims of sexual assault should already be protected from HBV infection, and do not need further doses. For a victim who is not fully vaccinated, the vaccine series should be completed. Unvaccinated persons in this setting should receive the first does of vaccine at the time of the initial clinical evaluation. Unless the offender is known to have acute hepatitis B, HBIG is not required.

Sexual abuse of children frequently occurs over a prolonged period, often making it difficult to define the last exposure. However, when sexual abuse is identified, hepatitis B vaccination should be initiated in previously unvaccinated children.

Case Management

The goal of STD prevention is to stop the spread of disease and to prevent the development of complications. The DIS will make a significant contribution to that effort by learning to interview successfully and by ensuring that all sex partners of HBV infected individuals are identified and given prophylaxis.

Local policy will dictate DIS responsibility for hepatitis B case management and will depend on whether the person has acute or chronic HBV infection. Laboratory testing should be used to confirm suspected acute or chronic HBV infection and infected persons should be referred for medical follow up and possible treatment of chronic infection.

Sex Contacts

Previously unvaccinated sex partners of persons with acute hepatitis B should receive postexposure immunization with HBIG and hepatitis B vaccine within 14 days after the most recent sexual contact. Administration of vaccine with HBIG in this setting has the added advantage of conferring long term protection. Testing of sex partners for susceptibility to HBV

infection (anti-HBc), before giving post exposure immunization, can be considered if it does not delay postexposure immunization beyond 14 days. If the exposure was recognized after 14 days than hepatitis B vaccine alone would be appropriate.

Non-Sexual Household Contacts

Nonsexual household contacts of patients who have acute hepatitis B are not at increased risk for infection unless they belong to a group for which vaccine is recommended (see Appendix Hep-1) or are exposed to the patient's blood (e.g., sharing a toothbrush or razor blade). Unvaccinated infants living in a household with an acutely infected care-giver, should receive HBIG and begin the hepatitis B vaccine series. If the patient with acute hepatitis B becomes chronically infected (i.e., remains HBsAg-positive after 6 months), all household contacts should be vaccinated.

Exposure to Persons Who Have Chronic HBV Infection

Active postexposure prophylaxis with hepatitis B vaccine alone is recommended for sex or needle-sharing partners and non-sexual household contacts of persons with chronic HBV infection. Post-vaccination testing (anti-HBs) is recommended for sex partners of persons with chronic HBV infection. Although most would be expected to respond to vaccination, those found not have responded should receive a second, complete vaccination series. Those persons found not to have responded should be counseled to use methods to protect themselves from sexual HBV transmission (e.g., condoms).

Introduction to Hepatitis C

HCV infection is the most common chronic bloodborne infection in the United States. By 1998, the annual number of new infections has declined by >80% to 41,000. Data from the Third National Health and Nutrition Examination Survey (NHANES III), conducted during 1988-1994,have indicated that an estimated 3.9 million Americans (1.8%) have been infected with HCV. Most of these persons (2.7 million) are chronically infected and might not be aware of

their infection because they are not clinically ill. Infected persons serve as a source of transmission to others and are at risk for chronic liver disease or other HCV related chronic diseases.

Transmission

HCV is most efficiently transmitted by direct percutaneous exposure to infected blood, such as receipt of a blood transfusion from an infected donor (prior to 1992) or injection drug use. The highest prevalence of infection is found among persons with large or repeated direct percutaneous exposures to blood, such as injecting drug users (IDU), persons with hemophilia treated with clotting factor concentrates produced before 1987, and recipients of transfusions from HCV-positive donors. Injection drug use is the most common risk factor for acquiring HCV infection. Studies show that HCV infection might be acquired within the first few months of injecting; one study reported that 60% of injection drug users were anti-HCV positive within 2 years of injecting.

Although less efficient, occupational, perinatal, and sexual exposures also can result in transmission of HCV. Health care, emergency medical, and public safety workers who have exposure to blood in the workplace are at risk of being infected with bloodborne pathogens. However, prevalence of HCV infection among health care workers is not greater than the general population, averaging 1%-2%, and is 10 times lower than that for HBV infection. There is a 5% 6% risk of perinatal transmission from and HCV-infected mother to her infant. The risk is greater (up to 17%) if the mother is co-infected with HIV. Infection rates are not affected by method of delivery (caesarian-section or vaginal).

Although results from several studies indicate that sexual activity is related to HCV transmission, the role of sexual activity in the transmission of HCV remains controversial. Factors that are independently associated with sexual transmission are exposure to an infected sex partner, increasing number of sex partners, failure to use a condom, history of STDs,

(female) sex with a male IDU, and sex involving trauma. Data indicate that sexual transmission may account for up to 20% of new HCV infections.

HCV is not spread by sneezing, hugging, coughing, food or water, sharing eating utensils or drinking glasses, or other casual contact.

Course of Disease

The average time period from exposure to seroconversion (positive for hepatitis C antibody [anti-HCV]) is 6-7 weeks, and anti-HCV can be detected in > 97% of persons by 6 months after exposure. HCV can cause acute or chronic infection. Persons with acute infection typically are either asymptomatic or have mild clinical illness. If symptoms do occur, <20% may have jaundice, dark urine, clay-colored stools, or "flu-like" symptoms such as fatigue, abdominal pain, loss of appetite or nausea. After acute infection, 15%-25% of persons appear to resolve their infection spontaneously, however, resolved HCV infection does not provide immunity to reinfection. Chronic HCV infection develops in the remaining 75%-85% of persons infected, with chronic liver disease developing in 70% of cases. Extreme fatigue is a very common symptom in persons with chronic hepatitis C.

The course of chronic liver disease caused by HCV usually progresses at a slow rate without producing any symptoms or physical signs in the majority of people during the first two or more decades of infection. Factors that contribute to the progression of chronic HCV infection are: increased alcohol intake, being > 40 years old at the time of infection, being male, and having alcoholic liver disease.

Prevention and Control of Hepatitis C

Reducing the burden of HCV infection and disease in the United States requires implementation of primary prevention activities that reduce the risks for contracting HCV infection and secondary prevention activities that reduce the risks for liver and other chronic diseases in HCV-infected persons. Persons infected with HCV need to be identified and provided with appropriate medical management and possible antiviral therapy. There is no vaccine for hepatitis C and prophylaxis with immune globulin is not effective for preventing HCV infection after exposure.

Persons seeking care in STD clinics or other primary care settings should be screened for risk factors for HCV infection, and those with the following risk factors should be offered counseling and testing:

- Illegal injection drug use, even once many years ago;
- Blood transfusion or solid organ transplant before July 1992;
- Receipt of clotting factor concentrates produced before 1987;
- Long term hemodialysis

Persons who test negative for HCV whose exposure was in the past should be reassured. Persons who test positive for HCV infection should be provided information regarding how to protect their liver from further harm, how to prevent transmission to others, and the need for medical evaluation and possible treatment.

To protect their liver from further harm, HCV-positive persons should be advised to

- not drink alcohol;
- not start any new medicines (including over-the-counter or herbals) without checking with their doctor; and
- get vaccinated against hepatitis A if they have liver damage;
- get vaccinated against hepatitis B, for whom vaccine is recommended (see appendix Hep-1).

To reduce the risk for transmission to others, HCV-positive persons should be advised to:

- not donate blood, body organs, other tissue, or semen;
- cover cuts and sores;
- not share any personal items that may have blood on them (e.g., toothbrushes, razors);

Regardless of test results, persons who have behaviors that put them at risk for HCV infection should be provided with information regarding how to reduce their risk for acquiring infection. Persons who inject drugs should be counseled to stop using and get into treatment. If they do not stop using, they should be counseled on how to inject safely (i.e., use of sterile, single-use equipment each and every time they inject).

Persons with multiple sex partners should be counseled to use "safer" sex practices, such a limiting the number of partners and using condoms. HCV-positive persons with one long-term steady sex partner should discuss the risk, which is low but not absent, with their partner. They may decide to use barrier precautions such as latex condoms to possibly reduce the already low risk of HCV transmission.

Special Circumstances
Hepatitis C and Pregnancy

Routine testing for HCV infection is not recommended for pregnant women unless they have risk factors for infection. HCV-infection is not a contraindication to breastfeeding; however, mothers should consider abstaining from breastfeeding if their nipples are cracked or bleeding.

Children Born to HCV Positive Women

Children born to HCV-positive women should be tested for HCV infection. Testing of infants for anti-HCV should be performed no sooner than age 12 months, when passively transferred maternal anti-HCV declines below detectable levels. Immune globulin and antiviral agents are not recommended for postexposure prophylaxis of infants born to HCV-positive women.

APPENDIX HEP - 1

Populations Recommended for Hepatitis Vaccinations

Hepatitis A Vaccine

The following groups should be offered hepatitis A vaccine:

- **men who have sex with men**, including those who report little or no current sexual activity;
- **illegal injection and non-injection drug users**;
- **children** living in certain parts of the United States where hepatitis A rates have been consistently elevated;
- **international travelers** visiting or working in countries except Canada, Western Europe, Japan, Australia, and New Zealand;
- **persons on chronic hemodialysis**;
- **persons receiving clotting factor concentrates**; and
- **persons with chronic liver disease**.

Hepatitis A vaccine is currently available through the Vaccines for Children (VFC) program for eligible persons who are less than 19 years of age.

Hepatitis B Vaccine

The following groups should be offered hepatitis B vaccine:

- **All persons treated in an STD setting who have not been previously vaccinated**.
- **In the non-STD clinic setting persons who should be vaccinated include:**

  - persons with a history of an STD;
  - persons with multiple sex partners (> one in 6 months);
  - sex partners of injection drug users;
  - sexually active MSMs;
  - illegal injection drug users;
  - household members, sex or drug-sharing partners of persons with chronic HBV infection;
  - persons on chronic hemodialysis
  - persons receiving clotting factor concentrates or
  - persons with occupational exposure to blood.

- All persons who have not been previously vaccinated who receive services in drug treatment programs and who are in long-term correctional facilities.

APPENDIX HEP- 2
Laboratory Tests For Hepatitis A, B, and C

Hepatitis A

The diagnosis of hepatitis A cannot be made on clinical grounds alone and requires serologic testing, which is available commercially. The presence of IgM antibody to HAV (IgM anti-HAV) is diagnostic of acute HAV infection. A positive test for total anti-HAV indicates immunity to HAV infection, but does not differentiate acute from past HAV infection, and can be positive after hepatitis A vaccination.

Hepatitis B

The diagnosis of acute or chronic HBV infection cannot be made on clinical grounds, but requires serologic testing (table 1). Hepatitis B surface antigen (HBsAg) is present in either acute or chronic infection. The presence of IgM antibody to hepatitis B core antigen (IgM anti-HBc) is diagnostic of acute HBV infection. Antibody to HBsAg (anti-HBs) is produced following a resolved infection and is the only HBV antibody marker present following immunization. The presence of HBsAg with a negative test for IgM anti-HBc is usually indicative of chronic HBV infection. The presence of total anti-HBc may indicate either acute, resolved, or chronic infection.

Hepatitis C

The diagnosis of HCV infection can be made by detecting either anti-HCV or HCV RNA. Anti-HCV is recommended for routine testing of asymptomatic persons and should include both anti-HCV by EIA and a supplemental antibody test (i.e., RIBA) for all positive EIA anti-HCV results. In settings where clinical services for liver disease are provided, use of reverse transcriptase polymerase chain reaction (RT-PCR) to detect HCV RNA might be appropriate to confirm the diagnosis of HCV infection (e.g., in patients with abnormal ALT levels or with indeterminate supplemental anti-HCV test results) although RT-PCR assays are not currently FDA-approved.

APPENDIX HEP - 3
Treatment for Hepatitis A, B, and C

The most recent publication of the STD Treatment Guidelines should be referenced when information or questions about treatment occur.